TORUS TRAIN OPS

Getting Started Guide

How Torus thinks — its concepts, its workflow, and the order to build your railroad in.

Railworks Studio · Version 1.0 · 2026-11-02

Getting Started

Welcome

Torus Train Ops turns your layout into an operating railroad. You describe the places, industries and equipment you already have; it works out what traffic that railroad would generate, writes the orders, assigns the cars, and hands each crew member the work in front of them.

The short version: you build your railroad once, then start a session. Each session, orders are generated from your consignments, you assign cars and jobs, and your crew works those jobs until the work is done.

The seven screens

Screen	What it's for
Operations Center	The landing page. What's moving, where the work is, what's stuck.
Industries	Every industry and the cars standing at it right now.
Locations	The places on your layout and what's at each one.
Routes & Jobs	The trains that do the work and the stops they make.
Reports	Printable views of the railroad's state and history.
Trainmaster	Settings, backups, and how the railroad operates.
Build Your Railroad	Where you create and edit everything above.

The first five are for *running* the railroad. The last two are for *setting it up*, and are visible to the Trainmaster role only.

Three further workspaces have no button of their own. They open from cards on the **Operations Center**, and that button stays lit while you are in them — it is the thread back.

Workspace	What it's for
Distribution Desk	Issue orders, and assign cars and jobs to them
Yardmaster	Work already rolling — routing, handoffs, advancing the session
Crew Workspace	Where a crew picks a train and works it

Core concepts

Six ideas carry the whole application.

Locations

A **Location** is a place on your layout — a town, a yard, a junction, an interchange. Locations nest: a Yard can sit *inside* a Town, which is how "Millbrook Yard, at Millbrook" is expressed. Settlements (Towns, Cities) are the parents; railroad features (Yards, Junctions, Interchanges) are the children.

Industries

An **Industry** is anywhere a car is worked — a mill, an elevator, a team track, a yard office. Each belongs to one location and has **spots**: the places a car actually stands. Every spot has a name the crew will read, how many cars fit, and what it is for — *Receive / Unload*, *Ship / Load*, *Ship & Receive*, or *Off Spot*. Spots on the same physical track share an optional **Track Name**, so they read together on paperwork: *Track 1 · Shipping A*.

An industry declares what it **receives** and what it **ships**, in commodities. That is what makes traffic possible.

Commodities and Car Types

A **Commodity** is what moves — lumber, grain, coal. A **Car Type** is what carries it, in AAR codes (XM boxcar, LO covered hopper). Commodities know which car types can carry them, so a boxcar is never assigned to a load that needs a tank car.

Rolling Stock and Locomotives

Your actual equipment. Each car has a road number, a car type, a **home location** (where it belongs) and a **current location** (where it is now). Locomotives are assigned to jobs as power.

Consignments

A **Consignment** is a standing traffic pattern: *this industry regularly ships this commodity to that industry, this many cars at a time.* Consignments are rules; they don't move anything themselves.

This is the piece newcomers most often miss. **You don't create orders by hand.** You describe recurring traffic once, and each session fresh orders are written from those rules. Get your consignments right and your railroad generates its own work indefinitely.

Routes & Jobs

A **Job** — a train — has its **Locations Served** and, optionally, assigned power. Orders are given to jobs. A job can pick up a car standing at any of its locations, and either deliver it — when the destination is one of its locations too — or set it out at another of its locations for a later job to take on. The order of the list is only the order the stops appear on switch lists and job briefs; a job may work them in any sequence.

How they fit together

```
Consignment  →  Order  →  assigned to a Car and a Job  →  worked by a crew  →  Closed
   (rule)      (this      (Distribution Desk)            (Crew Workspace)
                session)
```

Build your railroad

Build Your Railroad holds nine cards in three groups. Build them in this order — each depends on the ones before it.

Foundation

1. **Railroad Profile** — name, road name, era, scale. Cosmetic, but it appears on printed paperwork.
2. **Locations** — every town, yard, junction and interchange. Create settlements first, then the railroad features inside them.
3. **Car Types** — the AAR types you run. A standard set is already there; add or edit as needed. This is the one card that opens a dialog rather than a page of its own, and the same dialog is reachable from the Car Type field on any car. A type's **code** is what every car, consignment and commodity refers to it by, so once anything uses a code it can't be changed — the name and description still can. A code nothing uses yet can be changed freely (`GB` to `GON` , say).

Equipment

1. **Commodities** — what your railroad hauls, and which car types can carry each.
2. **Rolling Stock** — your cars. Bulk-import from a spreadsheet or JMRI rather than typing; see the **Import & Export Guide**.
3. **Locomotives** — your engines, with home locations.

Work

1. **Industries** — where cars are worked. For each: its location, its spots — a name, a capacity and a purpose each — and what it receives and ships. Every spot needs a name, and no two spots at the same industry may share one — beyond that, name them however you like: `Receiving` , `WBST1` and `12` are all fine. Spots that make up one physical track take the same **Track Name**, which is optional. Renaming a spot later carries the cars standing on it along.
2. **Consignments** — the recurring traffic between industries. This is where the railroad comes alive. Leave **Car Type** blank for *All compatible car types*, and switch a pattern off with **Inactive** rather than deleting it.
3. **Routes & Jobs** — the trains, and the stops each one makes.

> **Tip:** Start smaller than you think. Three industries and two jobs produce a real, working session you can learn from in an evening, and nothing has to be redone when you add the rest of the layout later.

> **Note:** Names are yours. Locations, industries, spots, commodities and jobs can be called anything — full names, abbreviations or plain numbers — and renaming one later updates it everywhere. The one thing that behaves like a key is a car type's code, above.

Seeing the sample railroad first

A small sample railroad ships with the application: the Cedar River Railroad, a 1980s Midwest short line with three towns, seven industries and two jobs. Go to **Trainmaster** → **Backup & Restore** → **Restore from File** and choose `Cedar River Railroad - Sample.json`, then close and reopen. It's the fastest way to see how a finished railroad is put together, and it's the railroad used in the how-to videos.

> **Warning:** Restoring replaces everything currently in the application. Back up your own work first.

Your first operating session

A session is one operating day.

1. Issue the orders

Go to **Operations Center** → **Distribution Desk** and click **Issue Car Orders**. This opens a new session and writes its orders in one step: your consignments are read, today's traffic is decided, and the orders appear on the Desk. You'll be told how many were issued.

2. Assign cars and jobs

Every new order starts **Open** — it knows what needs to move and where, but not which car or which train.

Assign each order by hand from the Desk, or click **Auto Assign** to match suitable cars and jobs across all unassigned orders at once. An order with both a car and a job becomes **Applied**, ready for a crew.

Requested Spot is optional, and sits in the same dialog. Name the spot the customer has asked for — the door, the dock, the pit — and it prints on the switch list and the waybill, and the set-out dialog opens on it. Leave it *Unspecified* and the crew chooses.

3. Work the jobs

Crews open the **Crew Workspace**, pick their train and work it. Each pickup and set-out is recorded as it happens.

4. Finish up

There is no "close session" step. When the work is done, the **Session Closeout** report summarises what happened, and the next session begins the next time you click **Issue Car Orders** — closed orders are cleared at that point.

If you want to move the railroad on a session without issuing new orders — to let loading and unloading progress, for instance — use **Advance Session** on the **Yardmaster** page. **Send Empties Home** there creates return orders for empty cars away from home.

Save a backup at the end of every session.

Orders, cars, and jobs

Order statuses

Status	Meaning
Open	Written, but no car and no job yet
Applied	A car and a job are assigned; ready to be worked
In Transit	The car has been picked up and is moving
Working	The car is at its destination being loaded or unloaded
Closed	Done

Car statuses

Status	Meaning
Available	Free to be assigned
Assigned	Spoken for by an order, not yet moved
On Train	Picked up, riding in a train
At Industry	Spotted at its destination
Released	Work finished, waiting to be pulled
Held at Yard / Interchange	Set out at a yard or interchange with no industry chosen — waiting for a job to take it on
Held en Route	Set out with no industry chosen somewhere that is neither of those — a town, a junction, staging. Parked partway, waiting for a job to take it on

Two further facts travel with a car: its **lading** — Loaded or Empty — and, when it's at an industry, its **placement**: Properly Spotted or Off Spot.

A car may also carry a note about its condition, shown beside its status: **Awaiting Spot** (it is standing somewhere its order's work can't be done), **Bad Order** (it failed during a session) or **Out of Service** (you have sidelined it). The last two are below.

When a car can't be worked

Out of Service sidelines a car that needs attention. Tick the box in the car editor and Torus gives that car no work until you clear it. Rolling Stock shows a red badge, and *Out of Service* is one of the status filters, so the shop list is one click away.

Bad Order is for a car that fails during a session. The crew sets it out where it stands, and a Dispatcher or Trainmaster tags it **Bad Order** on the Yardmaster board. The waybill stays open. Then one of two things happens:

- **Clear Bad Order** — it was repaired where it stood, and it carries on with its order.
- **Transfer load…** — the order and its load move to another available car of the same type, and the waybill goes with the load, exactly as a card would be moved to a substitute car. The broken car goes home empty and **Out of Service**.

A car already on an order can't be switched out of service — its load still has to be delivered. The box is greyed out, and the way forward is the one the railroad would take: set the car out and mark it Bad Order.

Why an order might not assign

If **Auto Assign** leaves an order Open, it's usually one of two things:

- **No suitable car** — nothing Available of a car type that can carry the commodity.
- **No job reaches the car** — no job has the location where a suitable car stands among its Locations Served, or the jobs that do aren't permitted to work it.

Orders are **freight demand**: when a consignment is due it issues its full Cars Min/Max, whether or not cars or spots are free that session. If the railroad can't keep up, those orders wait, and the **Unfulfilled Traffic** report names the reason for each one. To see whether your consignments ask for more than the railroad can carry, and what to change, open **Operations Analysis** (see *Reports*).

When the track is full on arrival

Orders don't wait for room, so a crew can find the track full — another job got there first, a car that should have been pulled wasn't, or the consignments send more than the industry can hold. The set-out dialog shows how much room each spot has. A full spot is a warning, not a refusal: the note reads **Spot full**, and **Confirm Set Out** asks before setting a car out over capacity — the layout is the truth, so a crew that finds room, or makes it, can still put the car there. Otherwise the crew has the same choices a real crew has:

- **Use the industry's overflow track**, if it has one. The car is delivered but sits **Off Spot**, and comes back onto a switch list for the spotting move once a job is assigned to it.
- **Set it out at a yard or interchange** with no industry chosen. The car is **Held at Yard** (or Interchange), its order stays open, and it waits — on the Yardmaster board under *Not Assigned* — until you give it a job. That's your call and your timing: nothing sends it back automatically, and nothing stops you sending it back before the industry has room if you'd rather the crew try again.
- **Set it out anyway**, if there really is room on the layout. **Confirm Set Out** asks first, and the car is then spotted where the crew chose and starts its work as normal.

Whichever the crew chooses, the order is not lost and no work is invented.

Rules the application enforces

Some things are refused outright, with an explanation rather than a silent failure:

- A car can't be on two active orders at once.
- You can't delete a location, industry, car or job that still has live work against it.
- An industry holding cars or live work can't be moved to another location.
- A spot with cars standing on it can't be removed from its industry — move the cars first.
- A spot an open order has asked for can't be removed either; change the Requested Spot on that order first.
- A car type's code can't be changed while any car, consignment, commodity or open order uses it.
- Every spot needs a name, unique within its industry.

Two Setup edits that are allowed, and what they do to the cars involved: renaming a spot keeps every car on it; changing a car's Current Industry clears its spot unless the new industry has a spot of the same name.

Running a session

Choosing how crews see their work

Trainmaster → Railroad Operations decides what a crew is handed. Two settings, and the first outranks the second:

- **Switch List Format** — *Digital Work Order*, worked on screen, or *Paper Switch List*, a printed sheet.
- **Crew Workspace Format** — *Digital Workspace* or *Car Cards & Waybills*.

Car Cards & Waybills and Paper Switch List can't both be on. The card rack is worked on screen, so choosing Car Cards & Waybills puts switch lists back to the Digital Work Order and greys the paper option out. Pick one: the crew reads a switch list, or it reads a packet of cards.

Two more settings dress the printed sheet:

- **Switch List Paper Style** — *Modern*, *Heritage* (1940s–60s typed and ruled forms), *Office Printout* (green-bar computer paper), *Conductor's Copy* (the Heritage form, filled in by hand) or *Work Order* (continuous fanfold, carrying the job brief and the work together). Print All Switch Lists uses this style whichever Switch List Format is chosen.
- **Printed Switch List Size** — *Half page* prints the switch list two-up with the Job Brief beside it, to be folded; *Full page* gives the switch list the whole sheet and the Job Brief a page of its own. The Work Order always prints full width.

Running a session on paper

Paper isn't all or nothing. There are two ways operators use it:

- **Crews on paper, the desk on screen.** Set **Switch List Format** to *Paper Switch List*. Crews read printed sheets while the Dispatcher keeps the Yardmaster board open and records the work as the night goes on.
- **Nothing but paper.** Print the railroad's whole night, put the computer away, and run it off clipboards. The application is told what happened afterwards.

For both, the printed sheet *is* the plan: Torus takes it that the plan happened, and asks only for what didn't. That is what **Worked as Printed** is for, and it is why a paper night costs one screen at the end instead of a screen all evening.

While the night is running the application knows nothing about it. The Yardmaster board, Industry Status and every report still show where the cars stood when you printed. A session has no clock either, so you can close the application after printing and record the night the next morning — the session will be where you left it.

Print All Switch Lists does work on a digital railroad, and prints the same sheet in the same paper. There is rarely a reason to: a railroad working on screen has its work on screen. The printed sheet appears *in* the Crew Workspace only when the format is *Paper Switch List*.

1. Issue the orders and assign the cars and jobs on the **Distribution Desk**.
2. **Trainmaster → Railroad Operations → Print All Switch Lists** prints every train's list for the session in one go. **Print All Waybills** does the same for the waybills.
3. Run the session on paper. Crews mark their sheets up as they work.
4. Afterwards, open **Yardmaster → Worked as Printed…**, beside Advance Session. Every job of the session is listed, each line already reading as printed — picked up, and set out where the car was going. Report only what went differently: left behind, still on the train, set out somewhere else, or on another spot. Then press **Record** once.

How many times round you go depends on how the work is divided. If each order is worked end to end by one job — the local lifts the car at the shipper and spots it at the receiver — one pass covers the whole night: print, run, record, done. That is the ordinary case.

If a car changes trains during the night — a through freight leaves it at the interchange and the yard switcher takes it from there — record the night in rounds. Record the first sheets, assign the waiting cars to their next job on **Yardmaster**, print again, and record again, until nothing is waiting. Each round, **Print All Switch Lists**

prints only the jobs that have new work, so a job's earlier lines are not printed a second time. The number of rounds is the length of the longest chain of hand-offs rather than the number of hand-offs: every first leg prints together, and every second leg prints together in the round after it.

On a railroad that runs nothing but paper, those rounds happen **before** the session rather than after — a round's sheets can't be printed until the round before it has been recorded. That is **Pre-Session Processing**, below.

Every move recorded that way goes through exactly the same path as a pickup or set-out clicked by hand, so loading, unloading, handoffs, the movement log and the reports all behave as they would have. A line the same job already worked on screen this session is shown as done and skipped, so there is no harm in running the report twice. Posting it is a Dispatcher's or Trainmaster's job, like the rest of the office work.

Torus decides the next session's traffic from where the cars actually are, so record the session before issuing the next one.

Pre-Session Processing

Pre-Session Processing lets you prepare an entire operating session before crews begin running trains.

Using **Print All Switch Lists** and **Worked as Printed** (on Yardmaster, beside Advance Session), you generate switch lists, record the movements as completed, assign cars awaiting their next movement on Yardmaster, and repeat the process until all planned work is accounted for.

The result is a complete set of printed switch lists, ready to distribute to crews before the operating session begins.

If a crew works something differently, correct it afterward with Misplaced, Bad Order, a fresh Pick Up or Set Out, or the car editor. There is no undo for a recorded move.

Note: This workflow records movements in Torus before they physically occur on the railroad.

The Crew Workspace

A crew picks a train on the left and works it on the right. Each move is recorded as it's made: a pickup marks the car On Train; a set-out spots it and asks whether it's properly spotted.

Car Cards & Waybills

The traditional paperwork model, on screen. The left pane holds the job's packet of car cards; selecting a card pulls the waybill attached to it. A car card belongs to the *car*; a waybill belongs to the *shipment*. They are deliberately never merged.

The arrangement is the same on a phone — the rack on the left, the waybill on the right — with a sideways swipe between the two rather than a different layout to learn.

Reports

Reports holds six printable views:

Report	Answers
Yard Inventory	What's standing where, right now
Industry Work Report	What each industry is waiting for
Wheel Report	Every car movement, in order
Unfulfilled Traffic	What didn't get done, and why
Operations Analysis	Whether your consignments ask for more than the railroad can carry, and what to change (Trainmaster only)
Session Closeout	A summary of the session just finished

Movement history is captured **at the moment of the move** and never recalculated, so a report of last session still says what was true then.

Operations Analysis

A check-up on your traffic settings, for the Trainmaster. It compares the carloads your consignments will generate over the next 10 sessions with what your tracks and cars can realistically move, and shows:

- **The summary** — expected carloads, about how many can move, and whether demand exceeds capacity.
- **Setup problems**, each with the fix — for example, a customer with no track that can receive.
- **Every consignment** with its expected carloads, what can move and what stands in its way: a full industry, not enough cars, or a setup problem. Choose **Needs attention** to see only the ones with a problem.
- **Recommendations** — for each full industry or short fleet, the smallest change to **Cars Min/Max** or **Order Interval** that would bring it within capacity.
- **Job warnings** — a job working at its limit session after session, for information.

Each figure says where it came from. **From history** means it was worked out from what your crews have actually done in recent sessions; **From settings** means there isn't enough history yet, so it comes from your consignment and industry settings. A new railroad starts mostly *From settings* and moves to *From history* as you operate.

The report changes nothing itself. Make a change in **Consignments** (or add a track or cars), then press **Refresh** to see the effect.

Trainmaster

Settings, backups, and how the railroad operates. Visible to the Trainmaster role only.

Railroad Operations

What a crew is handed, and how the railroad behaves between sessions.

- **Switch List Format**, **Crew Workspace Format**, **Switch List Paper Style** and **Printed Switch List Size** — see *Choosing how crews see their work*.
- **Printed Switch Lists & Waybills** — **Print All Switch Lists** and **Print All Waybills** print every train's paperwork for the current session, for the whole railroad at once.
- **Return Car Behavior** — when an emptied and released car gets its return order: *With Generate Orders* (the default, along with the session's new orders), *Immediately* (the moment the car comes free), or *Manually* (only when you press **Send Empties Home** on the Yardmaster page).

Backup & Restore

Save the whole railroad to a file, and restore one. See *Backups* in Part 1, and *Seeing the sample railroad first* for restoring the sample.

Danger Zone

Two red buttons at the foot of the page. Both affect every connected device immediately, and neither can be undone — save a backup first.

Reset Railroad clears the operating activity and leaves the railroad itself alone. Every order, assignment and movement goes, and every car returns to its Home Location. Your locations, industries, consignments, roster, locomotives, jobs and settings all stay. It is how you put a layout back to a clean starting point without rebuilding it — after a session that went sideways, or before a visitor's first run.

Keep session count and order rotation is ticked by default. Left ticked, the session number, the session records, the movement log, waybill numbering and each consignment's place in the rotation all survive, so resetting before a session still gives you different traffic than last time. Unticked, those go too and the next **Issue Car Orders** starts again at Session 1.

A car with no Home Location has nowhere to be returned to, so give every car one before you reset.

Clear ALL Data (Start Over) clears the railroad itself — locations, industries, cars, consignments, jobs, orders and settings — so you can begin again from nothing. You'll be asked to type **CLEAR** to confirm. The standard AAR car types go with it; **Restore AAR Defaults**, in the Manage Car Types dialog, puts them back.

Common questions

Do I have to create orders by hand? No. Write consignments once and each session generates its own orders. Manual orders exist for one-off moves.

What happens to unfinished work at the end of a session? It stays open and carries forward — nothing is discarded. The Session Closeout report lists what was left. Closed orders are cleared when the next session is issued, so the board stays current.

Can I run without a crew? Yes. Sign in as Trainmaster and work the jobs yourself — everything behaves the same solo.

Why can't I delete this location? Something still depends on it: industries, cars, or a job whose route includes it. The refusal message names what.

My car is at the right industry but the order isn't closing. Check the placement. A car set out *Off Spot* has arrived but isn't properly spotted, so its work isn't complete.

More orders are issued than my railroad can work. What should I change? Open **Reports → Operations Analysis**. It names the industries that are full and the car types that are short, and suggests the smallest Cars Min/Max or Order Interval change for each. Adding a spot or more cars works too. Press **Refresh** after each change.

The track was full when my train arrived. What now? See *When the track is full on arrival* above: use the overflow track, set the car out at a yard or interchange and give it a job when you're ready, or — if there really is room — confirm the set-out when the dialog asks.

Can I rename things once the railroad is running? Yes. Names aren't what the railroad runs on — rename a location, industry, track, commodity or job and everything follows. The exception is a car type's code, which is locked while anything uses it.

Do I need an internet connection? Only to activate your licence. Running sessions is entirely local. You do need a WiFi network so crew devices can reach the layout computer, and it doesn't have to be connected to the internet.

Can I change my railroad mid-session? Yes, with care. Setup changes take effect immediately, but an industry holding live work can't be moved, and deleting anything with work against it is refused.

Where is my data? In `%APPDATA%\Torus Train Ops`, alongside photos and backups. Uninstalling doesn't delete it.

Getting help

Questions, problems or feedback — reach out any time:

Email: Railworksstudio@gmail.com

Thanks for choosing Torus Train Ops. We hope it helps make every operating session more organized, more realistic, and more enjoyable.

— Brian & Diana, Founders, Railworks Studio